



1 What is claimed is:

2 [01] (Previously Presented -- Currently Amended) An architecture A-method and apparatus  
3 for the measurement of photomask optical path difference, ~~the apparatus comprising:~~  
4 A spatially coherent light source;  
5 An interferometric beam processing module;  
6 An optical microscope; and  
7 A photosensitive detector;  
8 Wherein said module is disposed to receive and divide light from said light source into a  
9 number of phase-coherent light beams, each of which passes through an aperture;  
10 Wherein said microscope is disposed to image the multitude of said apertures in said  
11 module with a given demagnification onto a photomask in order to create a  
12 multitude of phase probes; and  
13 Wherein said detector is disposed to receive the transmitted fringe pattern caused by the  
14 interference of the multitude of said phase probes;  
15 ~~and the method comprising the step of measuring the shift in interference fringe patterns~~  
16 ~~recorded for different phase probe positions on the photomask.~~  
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18 [02] (Currently Amended) The ~~apparatus~~ architecture of claim 1 wherein said light source is a  
19 laser with a wavelength that is approximately the same as the actinic wavelength of said  
20 photomask.

21 [03] (Currently Amended) The ~~apparatus~~ architecture of claim 1 wherein said optical  
22 demagnification of said apertures is greater than 50.

23 [04] (Currently Amended) The ~~apparatus~~ architecture of claim 1 wherein said module is of the  
24 Mach-Zehnder (MZ) interferometer type.

1   **[05]** (Previously Presented -- Currently Amended) The apparatus architecture of claim 1  
2   wherein the relative optical phase between said phase probes may be varied by suitable  
3   adjustments to said module.

4   **[06]** (Currently Amended) The apparatus architecture of claim 1 wherein said module is a  
5   dual-aperture screen.

6   **[07]** (Canceled)

7   **[08]** (Currently Amended) The apparatus architecture of claim 1 wherein said detector is a  
8   UV-sensitive CCD camera.

9   **[09]** (Currently Amended) The apparatus architecture of claim 1 wherein said detector is a  
10   photomultiplier tube (PMT).

11   **[10]** (Previously Presented -- Currently Amended) The apparatus architecture of claim 1  
12   wherein the number of said phase probes is two (2).

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1 [11] (Previously Presented -- Currently Amended) An architecture A method and apparatus  
2 for the measurement of photomask optical path difference, ~~the apparatus~~ comprising:  
3       A spatially coherent light source;  
4       An interferometric beam processing module;  
5       An optical microscope; and  
6       A photosensitive detector;  
7       Wherein said module is disposed to receive and divide light from said light source into a  
8               number of phase-coherent light beams, each of which passes through an aperture;  
9       Wherein said microscope is disposed to image the multitude of said apertures in said  
10              module with a given demagnification onto a photomask in order to create a  
11              multitude of phase probes; and  
12       Wherein said detector is disposed to receive the reflected fringe pattern caused by the  
13              interference of the multitude of said phase probes;  
14       ~~and the method comprising the step of measuring the shift in interference fringe patterns~~  
15       ~~recorded for different phase probe positions on the photomask.~~

16 [12] (Currently Amended) The apparatus architecture of claim 11 wherein said light source is  
17       a laser with a wavelength that is approximately the same as the actinic wavelength of said  
18       photomask.

19 [13] (Currently Amended) The apparatus architecture of claim 11 wherein said optical  
20       demagnification of said apertures is greater than 50.

21 [14] (Currently Amended) The apparatus architecture of claim 11 wherein said module is of  
22       the Mach-Zehnder (MZ) interferometer type.

1   **[15]** (Previously Presented -- Currently Amended) The apparatus architecture of claim 11  
2   wherein the relative optical phase between said phase probes may be varied by suitable  
3   adjustments to said module.

4   **[16]** (Currently Amended) The apparatus architecture of claim 11 wherein said module is a  
5   dual-aperture screen.

6   **[17]** (Canceled)

7   **[18]** (Currently Amended) The apparatus architecture of claim 11 wherein said detector is a  
8   UV-sensitive CCD camera.

9   **[19]** (Currently Amended) The apparatus architecture of claim 11 wherein said detector is a  
10   photomultiplier tube (PMT).

11   **[20]** (Previously Presented -- Currently Amended) The apparatus architecture of claim 11  
12   wherein the number of said phase probes is two (2).

13   **[21]** (New) The apparatus of claim 1 wherein said module is of the Twyman-Green  
14   interferometer type.

15   **[22]** (New) The apparatus of claim 11 wherein said module is of the Twyman-Green  
16   interferometer type.

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